feeding in agrimony is probably an error.

I am grateful to Mr S. N. A. Jacobs for the drawings of the mines of *nitens* and *aurella* (or *fragariella*), executed with his usual skill; and to Professor C. G. Varley for permission to study Water's specimens, mines and diaries preserved in the Hope Department of the University Museum at Oxford.

(*To be continued*)

Papilio cinyras ridens Fassl: a new status (Lepidoptera: Papilionidae)

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Papilio cinyras ab. *ridens* Fassl (1915) was described from a single male taken at Rio Songo, Bolivia, in March of 1913. Fassl called it a striking aberration and the only example in over 1000 *Papilio cinyras* that he had examined. While the original description is brief, the accompanying colour plate is excellent and *ridens* is readily recognised. Apparently the other specimens examined by Fassl were from Peru, for his form *ridens* is typical of specimens of *cinyras* from eastern Bolivia, which now appear to constitute a valid geographical subspecies. Although it has been ignored in the literature since the original description, *ridens* is the earliest available name for the Bolivian subspecies of *Papilio cinyras* and I am hereby elevating it to subspecific rank.

Papilio cinyras Menetries has long been considered conspecific with *Papilio thoas* Linnaeus, after they were united by Rothschild and Jordan (1906). Rothschild and Jordan were the first to use the male genitalia as a taxonomic criterion for the "*Papilio thoas*" group of swallowtails; a criterion which very conveniently separated *Papilio cresphontes* Cramer, *Papilio homothoas* Rothschild & Jordan, and *Papilio paeon* Boisduval from the others whom they united under *Papilio thoas*. Field data, which includes the sympatric occurrence of *Papilio thoas* and *Papilio cinyras* at several localities, leads me to believe that they are distinct species.

I have received a fairly large number of "*Papilio thoas*" from Bolivia, from Franz Steinbach of Cochabamba, over the past ten years. Steinbach had tentatively divided these into three ostensibly sympatric subspecies of *Papilio thoas*: *brasiliensis* Rothschild & Jordan, *thoantiades* Burmeister and *cinyras*. A careful examination of long series has shown me that there is no apparent intergradation or hybridization between the three forms, nor are they seasonal or brood forms. Their external appearance is very close, as is that of a half dozen closely related species, and I am unable to detect distinctions in the male genitalia, however I conclude that three species are involved. Steinbach's "*cinyras*" is a large-wide-banded form which agrees perfectly with Fassl's figure of

ridens, it is undoubtedly related to *cinyras* and specifically distinct from Steinbach's *"thoantiades",* a smaller narrow-banded form, very close in appearance to *thoantiades,* which I ally with *Papilio thoas.* The third form, Steinbach's *"brasiliensis",* appears to be a complete undistinct and possibly undescribed species; it has longer and narrower wings than the others and is quite distinct from *Papilio cinyras brasiliensis.*

This "mix" of populations in eastern Bolivia has led most authors to dismiss the area as a blend zone. The ranges of *Papilio cinyras brasiliensis* and *Papilio thoas thoantiades* also overlap in southern Brazil, Paraguay, Uruguay and northern Argentina. Rothschild and Jordan note the apparent overlap in these regions and give a rather unsatisfactory explanation by the statement: "It is probable that *P. thoas* is in these districts a wanderer like the Nearctic *P. cresphontes,* which would explain the absence of a strict line of separation between the Brazilian and Argentinian forms".

Papilio thoas and *Papilio cinyras* may be distinguished by the following characteristics:

1. Size. *Papilio cinyras* is considerably larger, length of fore-wing, as measured from tip to base, averages 70 mm. in males from Bolivia and specimens from Peru or Brazil are even larger. *Papilio thoas* from Bolivia, have an average fore-wing length of about 60 mm. in males, and Bolivian examples seem to average slightly larger than *P. thoas* from other areas including Argentina, Brazil, Venezuela, Colombia and Mexico.
2. Yellow bands on fore-wings. These bands are typically much wider and solider in *Papilio cinyras* than in *Papilio thoas.* However, they are intermediate in width in *Papilio cinyras brasiliensis.*
3. A few other characteristics which I have used for Bolivian specimens, and which may or may not apply to other populations include: Ground colour of wings, which is slightly more ochraceous in *thoas* and a cleaner brighter yellow in *cinyras.* The length of the tails which averages 25 mm. for males of *cinyras* and 20 mm. for males of *thoas.* The red-brown colouration at the base of cells M_2 and M_3 on the ventral hind-wing are much larger and more pronounced in *thoas* than in *cinyras.*

There are a number of characteristics that can be utilized for separating the three subspecies of *Papilio cinyras,* however the maculation of the dorsal fore-wing (figure 1) seems most reliable and convenient to use. The characteristics for distinguishing the subspecies of *Papilio cinyras* by the dorsal fore-wing are:

(A) *Papilio cinyras ridens.* Yellow band relatively wide; Four, or sometimes three, submarginal spots present; Apical spot relatively large; Spot in cell M_1, slightly indented towards costal margin and small spots in Sc, usually present.

(B) *Papilio cinyras cinyras.* Yellow band relatively wide; Submarginal spots never present; Apical spot quite variable in size; Spot in cell M_1, whole and never indented on costal margin; Small cell spot nearly always present.

(C) *Papilio cinyras brasiliensis.* Yellow band comparatively narrow; Four, or sometimes three, submarginal spots always present; Apical spot, usually large and triangular shaped; Spot in cell M_1, always deeply indented on costal margin; Cell spot usually absent or, if not, very small.

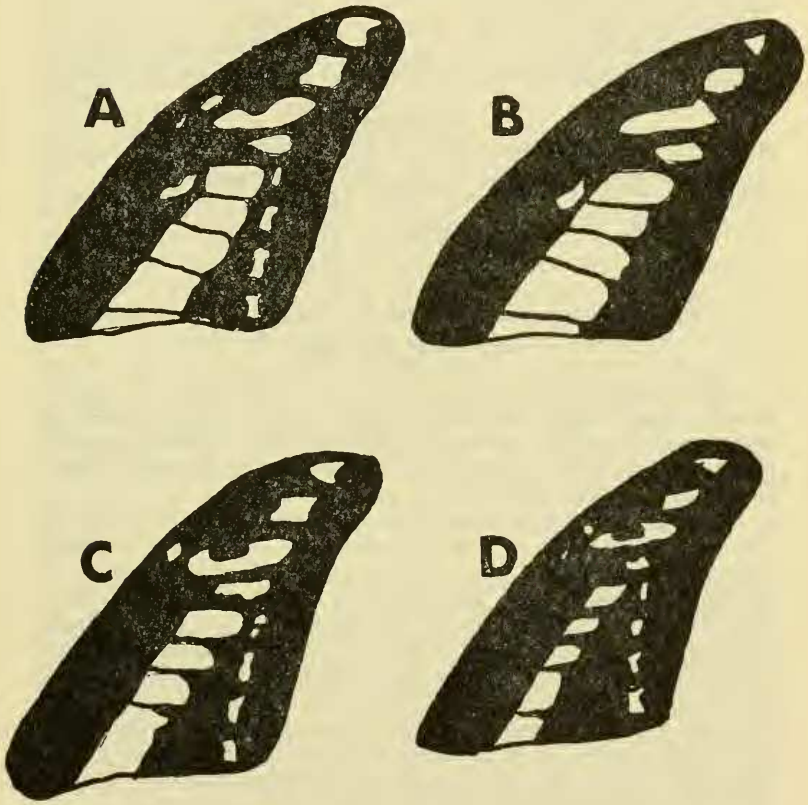

Figure 1. Representations of dorsal forewings to illustrate distinctions between subspecies of *Papilio cinyras* Menetries. (A) *P. cinyras ridens*, Beunavista, Dept. Santa Cruz, Bolivia. (B) *P. cinyras cinyras*, Huallaga Central, Huanuco, Peru. (C) *P. cinyras brasiliensis*, Belem, Para, Brazil. (D) *P. thoas thoantiades*, Beunavista, Dept. Santa Cruz, Bolivia. Actual sizes are shown.

A revision of *Papilio thoas* as proposed by Rothschild and Jordan (1906) seems in order and I propose the following:

Papilio thoas Linnaeus	
a. *t. oviedo* Gundlach	Cuba
b. *t. melonius* Rothschild & Jordan	Jamaica
c. *t. autocles* Rothschild & Jordan	Mexico
d. *t. nealces* Rothschild & Jordan	C. America to Trinidad
e. *t. thoas* Linnaeus	Orinoco and lower Amazon
f. *t. thoantiades* Burmeister	Bolivia and Brazil to Argentina
Papilio cinyras Menetries	
a. *c. cinyras* Menetries	Peru
b. *c. ridens* Fassl	Eastern Bolivia
c. *c. brasiliensis* Rothschild & Jordan	Brazil and southward

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Proclossiana eunomia Esperin Andorra

By J. V. Dacie, M.D.

The range of this northern insect is well known to extend into Central Europe, and Higgins and Riley (1970) mention its occurrence in widely scattered colonies in the Vosges and the Pyrenees in France as well as in Belgium, Germany, Czechslovakia, Austria and Bulgaria.

In the Pyrenees it appears to have been recorded only in the vicinity of Porté Puymorans, the local race being referred to by both Bretherton and Manley and Allcard as ssp. *ceretanensis* Deslandes. I now wish to report the finding of a colony in Andorra about 25-30 km. East of the locality at Porté Puymorans and separated from it by a formidable mountain barrier. The butterflies were seen flying on the 28th June 1970 in company with *C. selene* Schiff. and *H. virgaurae* L. in a damp and flowery meadow on the South slope of the Pyrenees. Only males were seen. Comparison of a short series with specimens taken at Porté Puymorans on the 29th June did not show any major differences between the two colonies.

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